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EXAMINER	
PHAN, HUY Q	
ART UNIT	PAPER NUMBER
2617	

DATE MAILED: 03/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/839,729	STRUHSAKER ET AL.	
	Examiner	Art Unit	
	Huy Q. Phan	2687	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to Amendment filed on date: 07/15/2004.

Claims 1-20 are still pending.

Response to Arguments

2. Applicant's arguments, see REMARKS pages 8-9, filed 07/15/2004, with respect to the rejection of claims 4-12 under 35 U.S.C. 112, first paragraph have been fully considered and are persuasive. The rejection of claims 4-12 has been withdrawn.

3. Applicant's arguments, see REMARKS page 10, with regard to the rejection of claims 1, 2, 4, 8-10, 12-14, 18 and 20 under 35 U.S.C. 102(e) as being anticipated by Kanterakis et al. (US-6,606,341), have been fully considered but they are not persuasive.

Applicant argued that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "cyclo-stationary filtering refers to relying on the assumption that channel characteristics are relatively stationary across successive data bursts (i.e., change slowly relative to data burst rates) to apply equalizer weights computed for one data burst to filtering of a next successive data burst, with the equalizer weights computed for the next successive data burst being employed to update the profile for the respective subscriber station and then used to filter a subsequent data burst" and "weights computed from a prior data segment",

see REMARKS page 10) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

With all the reasons stated above, the rejection is deemed proper and still stands.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 8-10, 12-14, 18 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Kanterakis et al. (US-6,606,341).

Regarding claim 1, Kanterakis et al. disclose an apparatus (fig. 3, col. 3, lines 34-45) for a communication station operable in a wireless communication system (fig. 1) to receive at least first burst data signals transmitted thereto upon at least a first channel by a first sending station (col. 2, lines 1-15), said apparatus comprising:

at least a first demodulator (312, 314 and 315) selectably coupled to receive indications of bursts of the first burst data signal (311), said first demodulator for

performing demodulation operations upon the indications received thereat (col. 4, lines 6-15); and

a controller (319) coupled to said first demodulator, said controller for controlling performance of the first demodulator (col. 3, line 66-col. 4, line 5) to cause cyclo-stationary filtering of successive bursts of the first burst data signal (col. 4, lines 15-28) during demodulation of the first burst data signal by said first demodulator (fig. 3 and its description).

Regarding claim 2, Kanterakis et al. disclose in figure 3, the apparatus as recited in the rejection of claim 1, wherein the wireless communication system comprises a fixed wireless access system (fig. 1), wherein said communication station comprising a base transceiver station (31), and wherein said first demodulator (312) being embodied at the base transceiver station (fig. 3 and its description).

Regarding claim 4, Kanterakis et al. disclose the apparatus as recited in the rejection of claim 1 wherein the first channel upon which the first burst data transmitted signal being characterized by at least a first channel-related parameter (col. 12, lines 12-43) and wherein the cyclo-stationary filtering caused by said controller to be performed being performed upon the first channel-related parameter (col. 3, line 66-col. 4, line 5).

Regarding claim 8, Kanterakis et al. disclose an apparatus as recited in the rejection of claim 1, wherein the first burst data signal being characterized by at least a first signal-related parameter (fig. 12 and col. 12, lines 12-52) and wherein the cyclo-stationary filtering caused by said controller to be performed being performed upon the first signal-related parameter (col. 3, line 66-col. 4, line 5).

Regarding claim 9, Kanterakis et al. disclose an apparatus as recited in the rejection of claim 8, wherein the first burst data signal exhibits FEC (forward error correction) (321) and wherein the first signal-related parameter (fig. 12 and col. 12, lines 12-52) upon which the cyclo-stationary filtering being caused to be performed by said controller comprising an FEC-related value (col. 10, lines 40-64).

Regarding claim 10, Kanterakis et al. disclose an apparatus as recited in the rejection of claim 8, wherein the first burst data signal exhibiting modulation orthogonalization (col. 9, lines 25-52) and wherein the first signal-related parameter (fig. 12 and col. 12, lines 12-52) upon which the cyclo-stationary filtering being caused by said controller to be performed comprising a modulation-orthogonalization value (col. 8, lines 45-66).

Regarding claim 12, Kanterakis et al. disclose an apparatus as recited in the rejection of claim 8, wherein the first burst data signal exhibiting time-adjustments (col. 11, line 60-col. 12, line 43) and wherein the first signal-related parameter upon which

the cyclo-stationary filtering is caused by said controller to be performed comprises a time-adjustment parameter (col. 12, lines 12-43).

Regarding claim 13, Kanterakis et al. disclose in figure 3, for use in a fixed wireless network (fig. 1) an apparatus (fig. 3 and its description) comprising:

a plurality of subscriber stations (35) (col. 3, lines 19-20); and

a communication station (31) for transmitting and receiving signals to and from said subscriber stations (fig. 5, col. 5, line 63-col. 6, line 18) wherein said communication station further comprising:

at least one demodulator (312, 314 and 315) coupled to the communication station for demodulating a plurality of data signals from a plurality of subscriber stations and received by said communication station (fig. 5, col. 5, line 63-col. 6, line 18); and

a controller (319) for processing incoming data signals and maintaining data signal profiles (318) wherein said controller being coupled to said demodulator for controlling said at least one (col. 3, line 66-col. 4, line 5) demodulator to cause cyclo-stationary filtering of successive bursts of one of the data signals (col. 4, lines 15-28) from one of the plurality of subscriber stations during demodulation of the one data signal by said a least one demodulation (fig. 3 and its description).

Regarding claim 14, Kanterakis et al. disclose in figure 3, the apparatus as recited in the rejection of claim 13, wherein the wireless communication system comprising a fixed wireless access system (fig. 1), wherein said communication station

comprising a base transceiver station (31).

Regarding claim 18, Kanterakis et al. disclose in figure 12, the apparatus as recited in the rejection of claim 13, wherein the data signals transmitted to the communication station by said plurality of subscriber stations being transmitted in bursts of selected time durations and wherein said controller further determines times of arrival and directions of the bursts which form the data signals (col. 11, line 60-col. 12, line 52).

Regarding claim 20, Kanterakis et al. disclose in figure 3, a method for acting upon at least first burst data signals transmitted to a communication operable in a wireless communication system (fig. 1), the first burst data signals transmitted to the communication station (31) upon a first channel by a first sending station (35), said method comprising: selectably coupling at least a first demodulator (312, 314 and 315) to receive indications of burst of the first burst data signal (311); controlling performance (col. 3, line 66-col. 4, line 5) of the first demodulator to cause cyclo-stationary filtering of successive burst of the first burst data signal during demodulation of the indications of the first burst data signal (col. 4, lines 15-28).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

a) Claims 3, 11, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanterakis et al. in view of Ganesan et al. (US-5,812,951).

Regarding claim 3, Kanterakis et al. disclose all the limitations of the apparatus as recited in the rejection of claim 2. But Kanterakis et al. fail to expressly show wherein first demodulator comprising the first demodulator and at least a second demodulator. However in the analogous art, Ganesan et al. teach in figure 9, wherein first demodulator comprising the first demodulator (160) and at least a second demodulator (162). Since, Kanterakis et al. and Ganesan et al. disclose an apparatus for wireless communication station; therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the system by specifically having first demodulator comprising the first demodulator and at least a second demodulator as taught by Ganesan et al. into the system of Kanterakis et al. for the purpose of providing wireless communication station being capable to communicate at least two mobile stations at the same time.

Regarding claim 11, Kanterakis et al. disclose all the limitations of the apparatus as recited in the rejection of claim 8, wherein the first signal-related parameter (fig. 12 and col. 12, lines 12-52) upon which the cyclo-stationary filtering being caused by said controller to be performed comprises antenna-combining parameters of the antenna assembly (col. 7, line 40). But Kanterakis et al. do to particulerly recite wherein the communication station including an antenna assembly formed by a first antenna

transducer and at least a second antenna transducer to provide antenna diversity. Ganesan et al. teach in figure 2, wherein the communication station including an antenna assembly formed by a first antenna transducer (29) and at least a second antenna transducer (30) to provide antenna diversity. Since, Kanterakis et al. and Ganesan et al. disclose an apparatus for wireless communication station; therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the system of Kanterakis et al. by specifically having the communication station including an antenna assembly formed by a first antenna transducer and at least a second antenna transducer to provide antenna diversity as taught by Ganesan et al. for the purpose of improving the quality and reliability of wireless communication station.

Regarding claim 15, Kanterakis et al. disclose all the limitations of the apparatus as recited in the rejection of claim 14. Kanterakis et al. do not explicitly disclose wherein the at least one demodulator comprising at least two demodulators, each demodulator embodied in a separate modem at the base transceiver station. However in analogous art, Ganesan et al. teach in figure 9, wherein the at least one demodulator comprising at least two demodulators (160 and 162).

Kanterakis et al. and Ganesan et al. fail to expressly recite each demodulator embodied in a separate modem at the base transceiver station. However, it is well known the art to place each demodulator in a separate modem at the base transceiver station in order to make easier for system installation and part replacement.

Regarding claim 19, Kanterakis et al. disclose in figure 3, the apparatus as recited in the rejection of claim 13. Kanterakis et al. do not particularly show wherein said controller further comprising a memory for storing and maintaining said data signal profiles and said channel profiles associated with each of the received said data signals. Ganesan et al. teach in figure 9, wherein controller (174) further comprising a memory (175) for storing and maintaining said data signal profiles and said channel profiles associated with each of the received said data signals (col. 15, lines 16-32), in order to separate profiles being created, stored and updated at the base station.

b) Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanterakis et al. in view of Schuchman et al. (US-5,283,780).

Regarding claim 5, Kanterakis et al. disclose the apparatus as recited in the rejection of claim 4. But Kanterakis et al. fail to expressly show wherein the first channel-related parameter upon which the cyclo-stationary filtering being caused to be performed by said controller comprises a fading-related parameter. However in the analogous art, Schuchman et al. teach wherein the first channel-related parameter upon which the cyclo-stationary filtering (col. 9, lines 9-67) being caused to be performed by controller (33) comprises a fading-related parameter (col. 10, line 58-col 11, line 15). Since, both Kanterakis et al. and Schuchman et al. are related to wireless communication transceiver; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system by specifically

having wherein the first channel-related parameter upon which the cyclo-stationary filtering being caused to be performed by said controller comprises a fading-related parameter as taught by Schuchman et al. into the system of Kanterakis et al. for the purpose of improving the quality and reliability of wireless communication transceiver.

Regarding claim 6, Kanterakis et al. and Schuchman et al. disclose the apparatus as recited in the rejection of claim 5. Schuchman et al. further disclose in figure 5, wherein the first demodulator (31) comprises a first equalizer (21) and wherein the fading-related parameter (col. 8, lines 41-67) upon which the cyclo-stationary filtering being caused to be performed by controller (33) comprises a first-equalizer weighting value (fig. 7 and col. 10, lines 1-38).

Regarding claim 7, Kanterakis et al. and Schuchman et al. disclose the apparatus as recited in the rejection of claim 6. Schuchman et al. further disclose in figure 5, wherein said controller further comprises a memory (col. 10, line 37) for storing and maintaining values of the first channel-related parameter.

c) Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanterakis et al. and Ganesan et al. and further in view of Waters et al. (US-4,932,070).

Regarding claim 16, Kanterakis et al. and Ganesan et al. disclose all the limitations of the apparatus as recited in the rejection of claim 15. Kanterakis et al. and

Ganesan et al. do not particularly teach wherein said base transceiver station being capable of operating two subscriber air interfaces on a burst-by-burst basis wherein each said burst comprising different data signal profiles and channel profiles. However in analogous art, Waters et al. teach in figure 3, wherein said base transceiver station (10) being capable of operating two subscriber air interfaces on a burst-by-burst basis wherein each said burst comprises different data signal profiles and channel profiles (col. 7, line 55-col. 8, line 42). Since, Kanterakis et al., Ganesan et al. and Waters et al. disclose an apparatus for wireless communication station; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Kanterakis et al and Ganesan et al. by specifically having a base transceiver station being capable of operating two subscriber air interfaces on a burst-by-burst basis wherein each said burst comprises different data signal profiles and channel profiles as taught by Waters et al. for the purpose of offering and enhancing wireless communication station of capability to communicate at least two mobile stations at the same time.

Regarding claim 17, Kanterakis et al., Ganesan et al. and Waters et al. disclose all the limitations of the apparatus as recited in the rejection of claim 16. Waters et al. further disclose wherein said first and second demodulator of said at least two demodulators alternately receive incoming data signals communicated by alternating ones of said subscriber stations (col.7, lines 36-41).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Alapuranen discloses "When switching the blocks of signal between the adaptive filter 40 and the normal filter 34 it is important to insure that the signal (interference) input to the adaptive filter 40 remains cyclo-stationary", (see figs. 1-2 and description).

b) Koch discloses that "the matched filter output signals (Za', Zb') which have been weighted with weight factors to form a first sum (S1) and a second adder circuit (12) for adding together the receive branch autocorrelation functions (A1, A2) weighted with the weight factors to form a second sum (S2), and includes an equalizer (3,7) evaluating the first and second sums (S1, S2), the weight factors being approximately inversely proportional to an instantaneous noise power (12, 22) in the respective receive branch (a,b)", (see specification).

7. **THIS ACTION IS MADE FINAL.**

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huy Q Phan whose telephone number is 571-272-7924. The examiner can normally be reached on 8AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Eng can be reached on 571-272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Huy Phan

George Eng.
GEORGE ENG
SUPERVISORY PATENT EXAMINER

Examiner: Phan, Huy Q. AU: 2687 Date: 03/14/2006